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## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO. B-4 0 3 0 TCP-1

# PLAN FOR PROPOSED TRAFFIC CONTROL, MARKING & DELINEATION

## BRUNSWICK COUNTY

## ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1253.01	SNOWPLOWABLE RAISED PAVEMENT MARKERS
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

## [INDEX OF SHEETS]

SHEET NO.	<u>TITLE</u>	
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS	
TCP-2	PROJECT NOTES & PM SCHEDULE	
TCP-3	PHASE I	
TCP-4	PHASE II	
TCP-5	PHASE III	
TCP-6	WORK ZONE WARNING SIGNS	

## **LEGEND**

#### **GENERAL**

DIRECTION OF TRAFFIC FLOW

NORTH ARROW

— PROPOSED PVMT. ----- EXIST. PVMT.

**WORK AREA** 

REMOVAL OF EXISTING PAVEMENT

#### TRAFFIC CONTROL DEVICES

T TYPE I BARRICADE

TYPE III BARRICADE

SKINNY DRUM

FLASHING ARROW PANEL (TYPE C)

STATIONARY SIGN

PORTABLE SIGN

STATIONARY OR PORTABLE SIGN

---- CRASH CUSHION

CHANGEABLE MESSAGE SIGN

TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)

POLICE

**■** FLAGGER

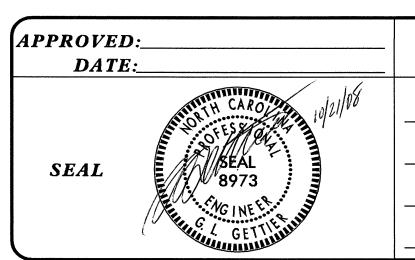
#### PAVEMENT MARKINGS

CRYSTAL/CRYSTAL PAVEMENT MARKER

YELLOW/YELLOW PAVEMENT MARKER

CRYSTAL/RED PAVEMENT MARKER

PAVEMENT MARKING SYMBOLS



PLAN PREPARED BY: N.C.D.O.T. WORK ZONE TRAFFIC CONTROL UNIT

J.S. BOURNE, P.E. TRAFFIC CONTROL ENGINEER

G.L. GETTIER, P.E.

TRAFFIC CONTROL PROJECT ENGINEER

J.W. GILSTRAP TRAFFIC CONTROL PROJECT DESIGN ENGINEER

S. GREEN CHA TRAFFIC CONTROL DESIGN ENGINEER / TECHNICIAN

B-4030 TCP-2

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

#### LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED, OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY RAMP OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

#### PAVEMENT EDGE DROP OFF REQUIREMENTS

G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

H) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT. IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

#### TRAFFIC PATTERN ALTERATIONS

I) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

#### SIGNING

- J) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- K) STATE FORCES WILL BE RESPONSIBLE FOR PERMANENT SIGNING.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

#### TRAFFIC CONTROL DEVICES

- M) SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY, WHEN LANE CLOSURES ARE NOT IN EFFECT. WHEN SKINNY DRUMS ARE ALLOWED, REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.
- N) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

#### PAVEMENT MARKINGS AND MARKERS

O) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME MARKING MARKER

1. ASPHALT SURFACE THERMOPLASTIC SNOWPLOWABLE
2. PROPOSED BRIDGE COLD APPLIED PLASTIC (TYPE I) PERMANENT RAISED

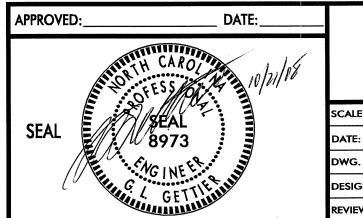
P) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
1. ASPHALT SURFACE	PAINT	TEMPORARY
& DETOUR BRIDGE 2. PROPOSED BRIDGE	COLD APPLIED PLASTIC (TYPE IV)	TEMPORARY

- Q) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- R) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

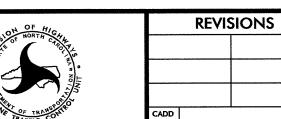
## PAVEMENT MARKING SCHEDULE

SYMB	OL DESCRIPTION	PAY ITEM
PAVE	MENT MARKINGS	
PA PI	WHITE EDGELINE DOUBLE YELLOW CENTER LINE	PAINT
RA RI	WHITE EDGELINE DOUBLE YELLOW CENTER LINE	COLD APPLIED PLASTIC (TYPE IV)
TA TI	WHITE EDGELINE DOUBLE YELLOW CENTER LINE	THERMOPLASTIC (90 MILS) (120 MILS)
CA CI	WHITE EDGELINE DOUBLE YELLOW CENTER LINE	COLD APPLIED PLASTIC (TYPE I)
PAVE	MENT MARKERS	RAISED MARKERS
MH MP MS	YELLOW & YELLOW YELLOW & YELLOW YELLOW & YELLOW	TEMPORARY PERMANENT SNOWPLOWABLE



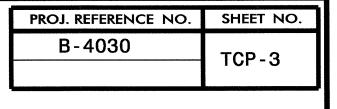
## GENERAL NOTES & PM SCHEDULE

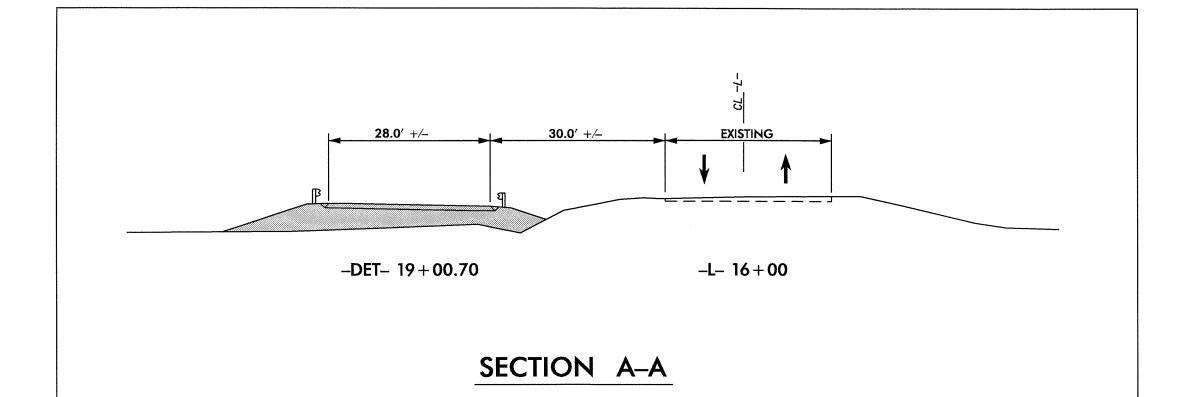
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PROPOSED CONSTRUCTION

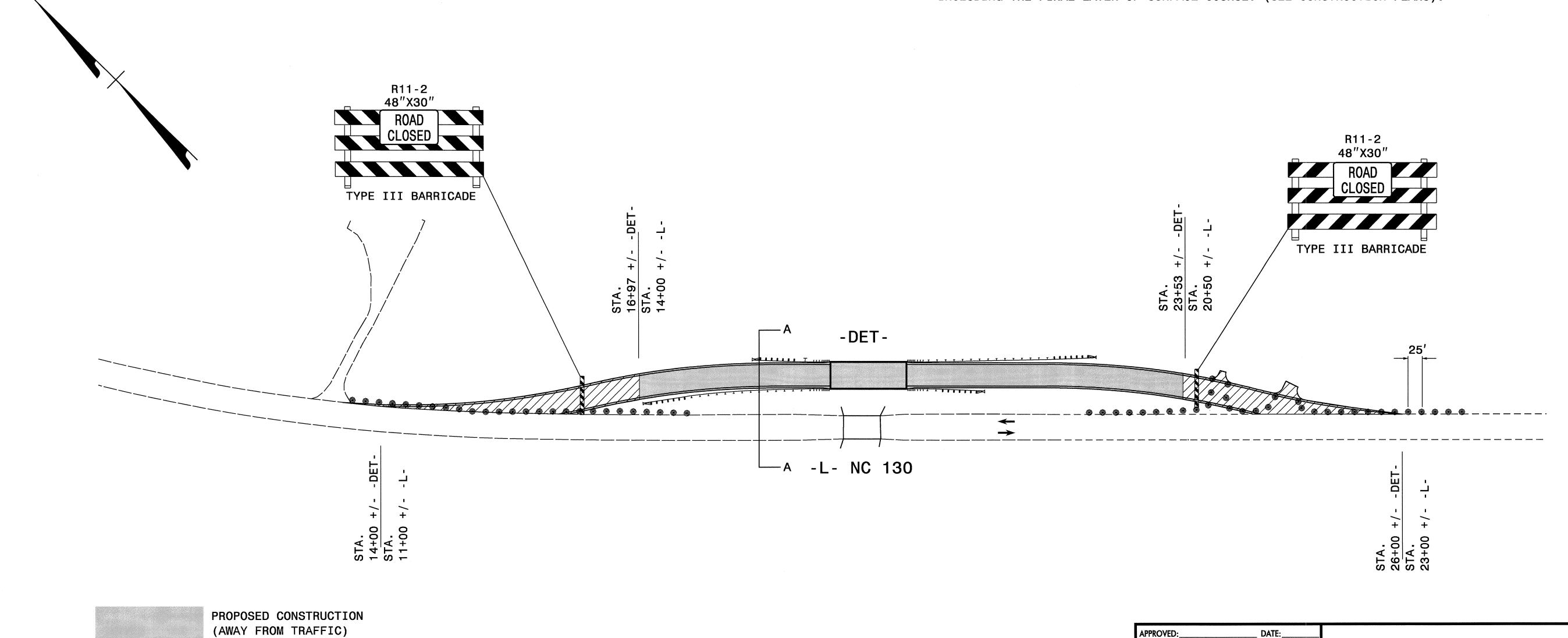
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## PHASE I

NOTES: RETURN TRAFFIC TO THE EXISTING PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERISE STATED IN THE PHASING OR DIRECTED BY THE ENGINEER.

COMPLETE ANY PROPOSED OR TEMPORARY WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE.

- STEP 1: CONTRACTOR SHALL INSTALL ALL ADVANCE WORK ZONE WARNING SIGNS. (SEE SHEET TCP-6).
- STEP 2: CONSTRUCT AS MUCH AS POSSIBLE, AWAY FROM TRAFFIC, PROPOSED DETOUR, BRIDGE AND APPROACHES FROM STATION 16+97 +/- -DET- TO STATION 23+53 +/- -DET- UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE. (SEE CONSTRUCTION PLANS).
  - USING ROADWAY STANDARD DRAWING No. 1101.02, SHEET 1 OF 9, CONSTRUCT PROPOSED DETOUR (-DET-) FROM STATION 14+00 +/- -DET- TO STATION 16+97 +/- -DET- AND FROM STATION 23+53 +/- -DET- TO STATION 26+00 +/- -DET-, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE. (SEE CONSTRUCTION PLANS).



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PHASE I

SCALE: NONE

DATE: 09/08

DWG. BY: SNG

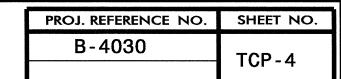
DESIGN BY: SNG

REVIEWED BY: JWG

REVISIONS

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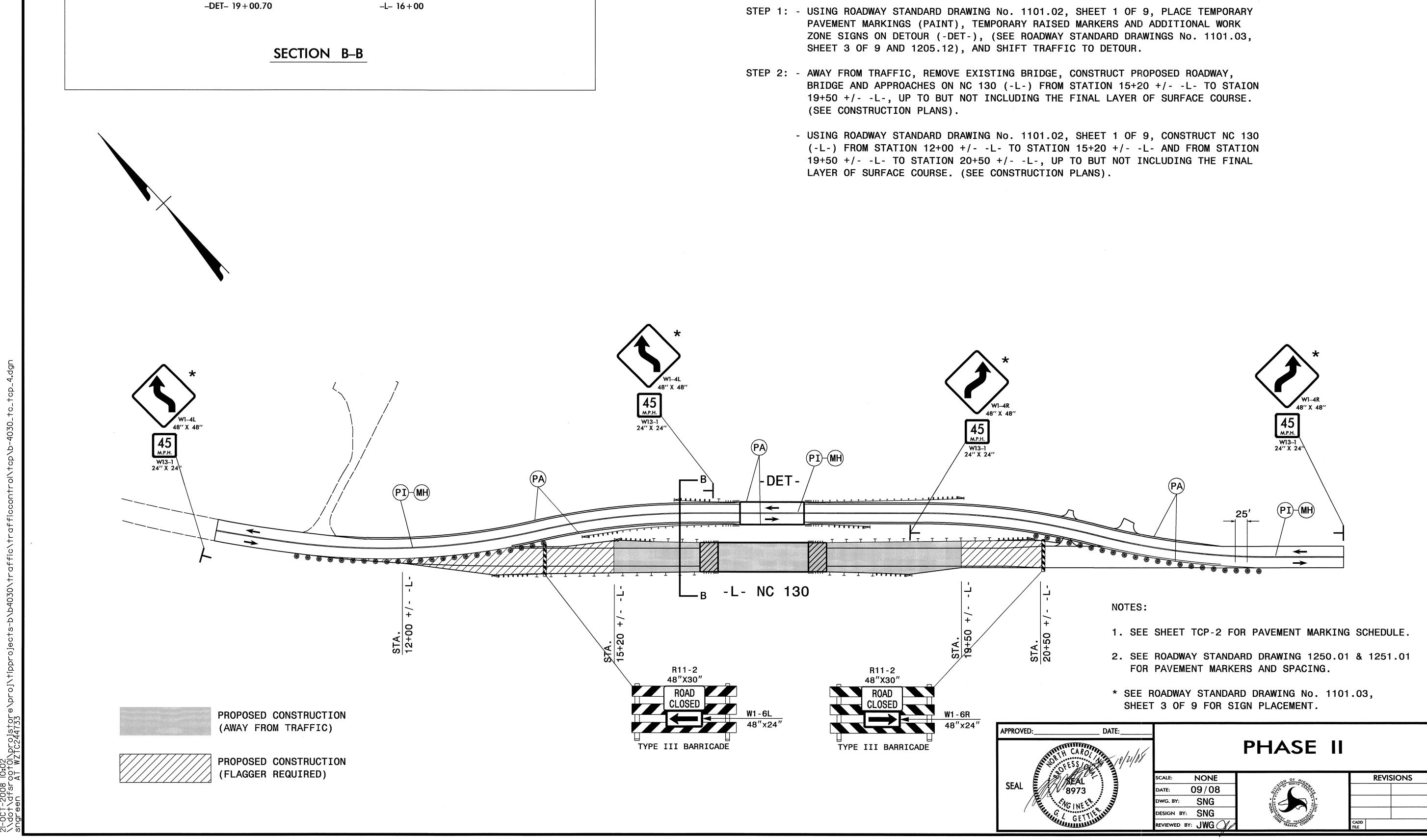
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## PHASE II

NOTES: COMPLETE ANY PROPOSED OR TEMPORARY WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE.

STEP 1: - USING ROADWAY STANDARD DRAWING No. 1101.02, SHEET 1 OF 9, PLACE TEMPORARY PAVEMENT MARKINGS (PAINT), TEMPORARY RAISED MARKERS AND ADDITIONAL WORK



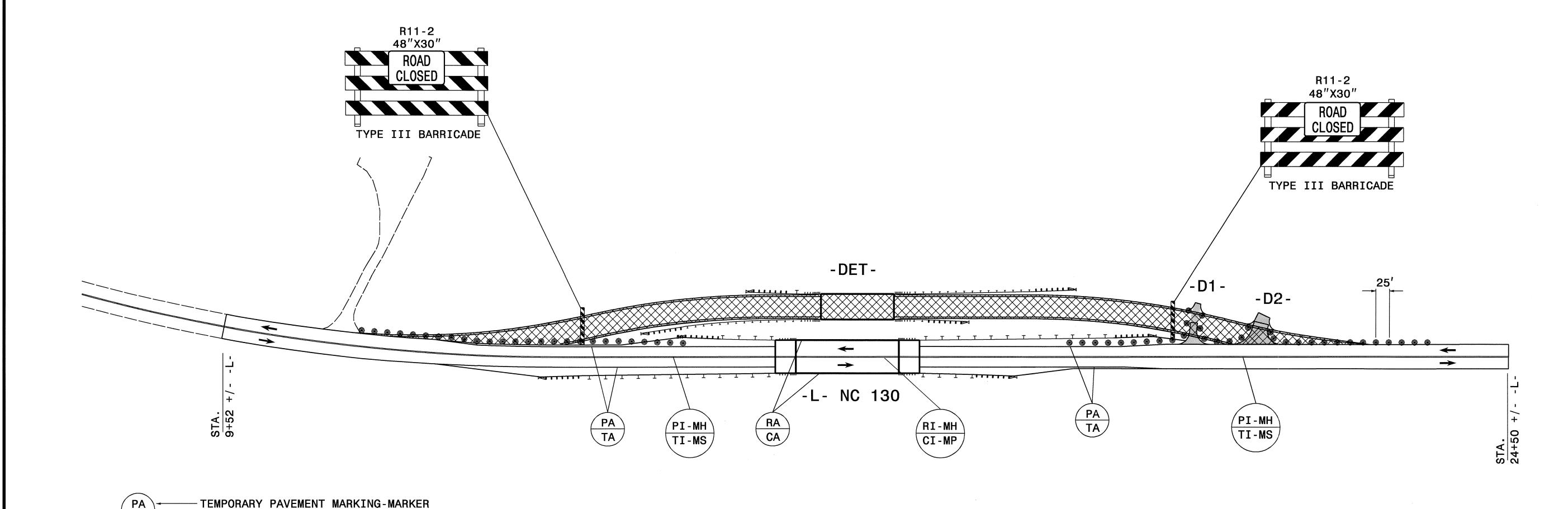
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B-4030	TCP-5
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## PHASE III

NOTES: COMPLETE ANY PROPOSED OR TEMPORARY WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE.

- STEP 1: USING ROADWAY STANDARD DRAWING No. 1101.02, SHEET 1 OF 9, PLACE TEMPORARY PAVEMENT MARKING (PAINT ON ASPHALT/COLD APPLIED PLASTIC, TYPE IV ON BRIDGE) AND TEMPORARY MARKERS ON PROPOSED NC 130 (-L-) AND SHIFT TRAFFIC.
- STEP 2: USING ROADWAY STANDARD DRAWING No. 1101.02, SHEET 1 OF 9, REMOVE TEMPORARY DETOUR BRIDGE AND PAVEMENT AND COMPLETE ANY REMAINING CONSTRUCTION OF -L-AND DRIVEWAYS (-D1-AND -D2-). (SEE CONSTRUCTION PLANS).
- STEP 3: USING ROADWAY STANDARD DRAWING No. 1101.02, SHEET 1 OF 9, PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS (THERMOPLASTIC ON ASPHALT AND COLD APPLIED PLASTIC, TYPE I ON BRIDGE) AND PERMANENT/SNOWPLOWABLE MARKERS FROM STATION 9+52 +/- -L- TO STATION 24+50 +/- -L-, AND OPEN TO FINAL TRAFFIC PATTERN. (SEE CONSTRUCTION PLANS).



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-PERMANENT PAVEMENT MARKING-MARKER

PROPOSED CONSTRUCTION

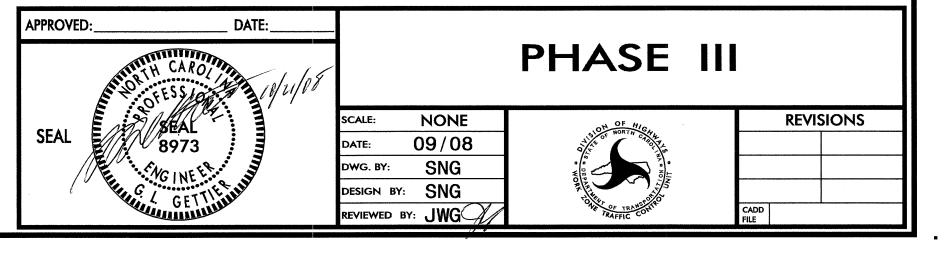
PROPOSED CONSTRUCTION

(FLAGGER REQUIRED)

(FLAGGER REQUIRED)

NOTES:

- 1. SEE SHEET TCP-2 FOR PAVEMENT MARKING SCHEDULE.
- 2. SEE ROADWAY STANDARD DRAWING 1250.01 & 1251.01 FOR PAVEMENT MARKERS AND SPACING.



PROJ. REFERENCE NO. SHEET NO. B-4030 TCP-6

**HIGHWAYS** 

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DIVISION

S. C

RALEIGH,

TRANSPORTATION CAROLINA NORTH **0F** 0F

RECOMMENDED MINIMUM

SIGN SPACING

 $\bigotimes$ 

500'

1000'

POSTED SPEED LIMIT

(M.P.H.)

≤ 50

≥ 55

STATE

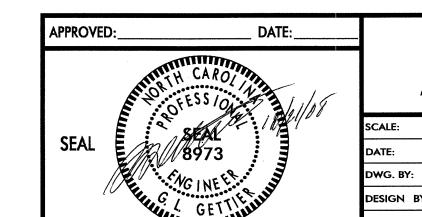
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**LEGEND** 

■ DIRECTION OF TRAFFIC FLOW

├ STATIONARY SIGN

SHEET 1 OF 1

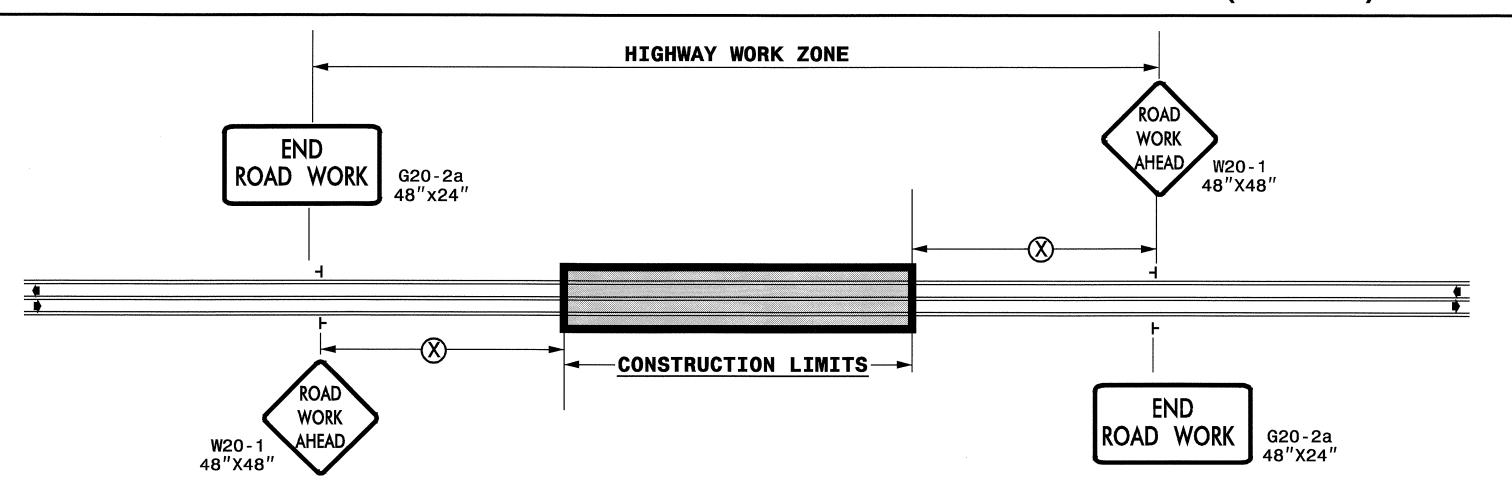


DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS

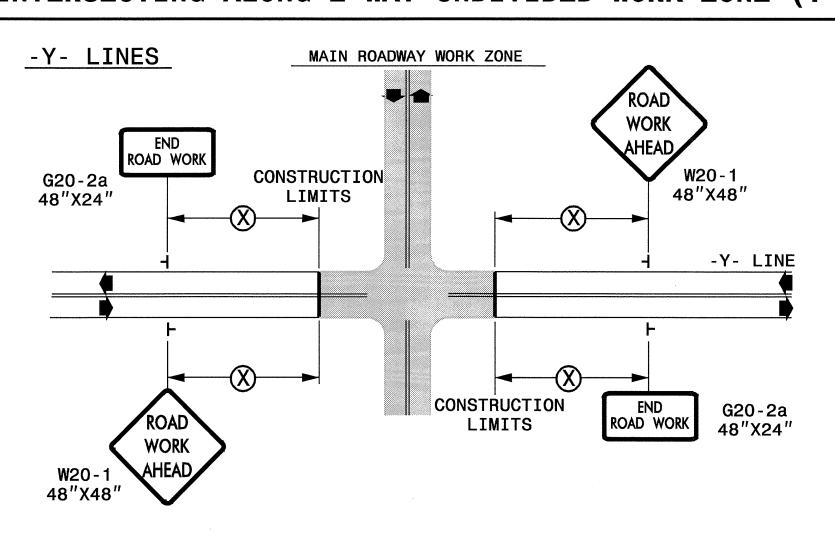
NONE REVIEWED BY:

**REVISIONS** 7–98 | 10/01 10–98 03/04 01/01 | 11/04

#### TWO-WAY UNDIVIDED \*\* (L-LINES)



## ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)



### **GENERAL NOTES**

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.
- \*\* TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.